

# Test Report

No. E100317021C-11

SHENZHEN ART-TECH R/C HOBBY CO.,LTD  
3/F,NO.1 D4 LIYUAN INDUSTRIAL AREA, LANG XIN COMMUNITY, SHIYAN STR,  
BAOAN DISTRICT, SHENZHEN CITY CHINA

Report on the submitted sample said to be Mini wolf(4CH)  
M/N : Art-tech standard version  
Item No. / Lot No. : 11011119101  
Sample Received Date : Mar.17.2010  
Testing Completed Date : Mar.30.2010

Test Requested : For compliance with RoHS directive 2002/95/EC and its amended directives

Test Method : 1. Review was performed for the samples disjointed from the submitted articles and the related test reports submitted by the Applicant.  
2. Tests was performed for the samples indicated by the photos in the report with test methods according to IEC 62321:2008 Ed.1: Procedures for the Determination of Levels of Six Regulated substances in Electrotechnical Products.  
(1) Screening by XRF Spectroscopy.  
(2) Wet Chemical Test  
a. Determination of Lead & Cadmium & Mercury by ICP & AAS.  
b. Determination of Hexavalent Chromium by UV-VIS.  
c. Determination of PBBs and PBDEs by GC/MS.

Test Results : Please refer to next page.

Signed for and on behalf of  
Dong Guan EMTEK Co., Ltd .

Mar.30.2010

Manager



No. E100317021C-11

Test Results:

No.	Name of the Sample	Part name	Sample Description	Pb (ppm)	Cd (ppm)	Hg (ppm)	Cr (ppm)	Br (ppm)
1-1	Shell	Top of plane	Plastic w/light-blue and black printing	BL	BL	BL	BL	BL
1-2		Window	Transparent plastic	BL	BL	BL	BL	BL
1-3-1		Empennage	Red plastic	BL	BL	BL	BL	BL
1-3-2			Black plastic	BL	BL	BL	BL	BL
1-4		Holder of empennage	Black plastic	BL	BL	BL	BL	BL
1-5		Landing gear	Black plastic	BL	BL	BL	BL	BL
2-1-1	Propeller	Stabilizer bar	Silver metal	BL	BL	BL	BL	N.A.
2-1-2			Black plastic	BL	BL	BL	BL	BL
2-1-3			Copper metal	IN	BL	BL	BL	N.A.
2-2		Propeller blade	Plastic w/multi-color coating	BL	BL	BL	BL	BL
2-3		Holder	Black plastic	BL	BL	BL	BL	BL
2-4		Axle	Silver metal	BL	BL	BL	IN	N.A.
2-5-1		Brace	Silver metal	BL	BL	BL	BL	N.A.
2-5-2			Black plastic	BL	BL	BL	BL	BL
2-6-1		Gears	White plastic	BL	BL	BL	BL	BL
2-6-2			Copper metal	IN	BL	BL	BL	N.A.
3	Accessories	Screw	Silver metal	BL	BL	BL	BL	N.A.

Note : ppm = mg/kg=parts per million      N.A.=Not Applicable      BL= Below Limit  
IN= Inconclusive,chemical analysis necessary  
Testing results are only used for reference.

No. E100317021C-11

Test Results:

Test Item	Result(ppm)		Detection Limit	Law Limit
	2-1-3*	2-6-2*		
Lead (Pb)	35538	24365	2 ppm	1000 ppm

Test Item	Result(ppm)		Detection Limit	Law Limit
	2-4			
Hexavalent Chromium (Cr <sup>6+</sup> )	Negative		2 ppm	1000 ppm

- Note :
1. ppm = mg/kg
  2. N.D. = Not Detected (Not detected is reported when the reading is less than detection limit value.)
  3. Negative = absence of Cr(VI) in the metallic sample  
Positive = presence of Cr(VI) in the metallic sample  
(The tested sample should further verified by boiling-water-extraction method if the spot test result cannot be confirmed or spot test result is negative)  
Boiling-water-extraction :  
Negative = absence of Cr(VI) in the metallic sample  
Positive = presence of Cr(VI) in the metallic sample  
Boiling-water-extraction solution is equal or greater that 0.02mg/kg with 50cm<sup>2</sup> sample surface area
  4. # = Positive indicates the presence of Cr(VI) on the tested areas  
Negative indicates the absence of Cr(VI) on the tested areas
- \* Lead in glass, ceramic or electronic components which are exempted from (RoHS) the requirements.  
Lead as an alloying element in steel containing up to 0.35% lead by weight, aluminum containing to 0.4% lead by weight and as a copper alloy containing up to 4% lead by weight. which are exempted from (RoHS) the requirements.

No. E100317021C-11

Remark :

- (1) (a) It is the result on total Br while test item on restricted substances is PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr<sup>6+</sup>.
- (b) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for CrVI) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321:2008 Ed.1 (unit: mg/kg)

Element	Polymer	Metal	Composite Materials
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	---	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

(c) OL = Over Limit, BL = Below Limit, LOD = Limit of Detection, --- = not conducted.

(d) The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition

- (2) (a) mg/kg = ppm=0.0001%, N.D. = not detected,  
(b) Unit and Detection Limit in wet chemical test

Test Items	Pb	Cd	Hg
Units	mg/kg	mg/kg	mg/kg
Detection Limit	2	2	2

The Detection Limit for single compound of PBBs & PBDEs is 5 mg/kg and Detection Limit of Cr<sup>6+</sup> for polymer & composite sample is 2 mg/kg.

- (c) According to IEC 62321:2008 Ed.1, result on Cr<sup>6+</sup> for metal sample is shown as Positive/Negative.  
Negative = Absence of Cr<sup>6+</sup> coating, Positive = Presence of Cr<sup>6+</sup> coating

No. E100317021C-11

Photo Appendix

